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ABSTRACT

A theoretical orientation to three goal structures (cooperation, competition, and individualization) is postulated, based upon Deutsch's extension of Lewin's theory of motivation. Lewin postulated that a state of tension within a person motivates movement toward the accomplishment of desired goals; a goal structure specifies the type of interdependence existing among persons as they work towards goal accomplishment. Discussion focuses on the conditions under which each goal structure may be productively used in instruction, the research relating to the overuse and inappropriate use of competition, and the research on the effects of cooperative goal structure on the coutcomes of instruction. Briefly summarized are the findings of the research now available in social psychology and education on the effects of goal structures on education. The results of the research overwhelmingly point to the need to train teachers in the procedures for all goal structures appropriately. (CS)

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EFFECTS OF COOPERATIVE, COMPETITIVE, AND INDIVIDUALIZED GOAL STRUCTURES ON LEARNING OUTCOMES[1]

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The theoretical orientation to the study of cooperation, competition, and individualization taken by the authors of this paper is based upon Deutsch's (1949, 1962) extension of Lewin's (1935) theory of motivation. Lewin postulated that a state of tension within a person motivates movement toward the accomplishment of desired goals. Defining a goal as a desired state of future affiars a goal structure specifies the type of interdependence existing among persons as they work towards goal accomplishment (D. W. Johnson & Johnson, 1974a, 1974b, 1975). Three types of goal structures can be postulated: cooperative, competitive, and individualistic. Following Deutsch a cooperative goal structure can be defined as a situation in which persons perceive that they can obtain their goal if and only if the other persons with whom they are linked can obtain their goal; if one person achieves the goal, all persons achieve the goal. A competitive goal structure exists when persons perceive that they can obtain their goal if and only if the other person with whom they are linked fail to obtain their goal; if one person achieves the goal, all other persons with whom he is linked fail to achieve the goal. An individualistic goal structure exists when the achievement of the goal by one person is unrelated to the achievement of the goal by others; whether or not a person achieves her goal has no bearing upon whether other persons achieve their goals.

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Deutsch notes that from his definition of cooperation it follows that when any individual behaves in such a way as to increase his chances of goal attainment, he increases the chances that the other members with whom he is linked will also achieve their goals. He states that the psychological consequences of such a state of affairs are: (1) substtutability--the actions of members in a cooperative relationship are interchangeable; if one member has engaged in a certain hehavior there is no need for others within the relationship to repeat the behavior; (2) positive cathexis--if the actions of one member in a cooperative relationship move the individuals towards their goal, his actions (and he as a person) will be favorably evaluated by the others; and (3) inducibility--if the actions of a person in a cooperative relationship move the others toward their goal, the others will be receptive to his attempts to induce them to engage in behavior that will facilitate his actions. Since every group member contributes in some way to accomplishing the task, they all have a success experience.

In a competitive relationship, on the other hand, when any individual behaves in such a way to increase his chances of goal attainment, he decreases the chances that the others with whom he is linked will achieve their goals. One may expect just the opposite of substitutability, positive cathexis, and positive inducibility if a person perceives another's actions are decreasing rather than increasing his chances of goal attainment. That is, he will hinder rather than facilitate, be negatively rather than positively influenced, dislike rather than like, correct rather than be satisfied with the other's actions. Since there can be only one "winner," most persons in a competitive situation have a failure experience.

One may expect, therefore, radically different types of behavior in cooperative and competitive situations, depending upon whether the actions of the individuals involved are seen as increasing or decreasing the chances of goal attainment. Deutsch (1962) emphasizes that an individual will tend to facilitate the actions of others when he perceives that their actions will promote his chances of goal attainment and will tend to obstruct their actions when he perceives that they will be detrimental to his goal attainment.

In an individualistic situation a person seeks her goals regardless of whether or not other persons are working on the goal and, therefore, there is no interaction required or desired. Although the general effects of goal facilitation will hold for individualistic situations, there is no built in interdependence concerning goal accomplishment.

The theory of cooperation, competition, and individualization is of great importance to education. Goal structures may be the most powerful variable in instruction as it has very strong and definite effects on learning processes and the cognitive and affective outcomes of learning. In this paper we shall outline the conditions under which each goal structure may be productively used in instruction, discuss the research relating to the overuse and inappropriate use of competition, and discuss our research on the effects of cooperative goal structures on the outcomes of instruction. We shall also briefly summarize the findings of the research now available in social psychology and education on the effects of goal structures on education.

The Appropriate Use of Goal Structures

Based upon an extensive review of the research and theory (D. W. Johnson & Johnson, 1974a, 1974b, 1975) the authors contend that cooperative, competitive, and individualistic goal structures are all effective under certain conditions, and that an education should use all three depending upon the specific instructional objectives and purposes. Students should be taught the skills necessary to function in all three types of situations. The conditions under which we hypothesize that each goal structure should be used is as follows.

The conditions under which competition should be used for instructional purposes are as follows: (1) when the instructional goals are to review, to drill, or to achieve quantity on a simple task that requires no help from another person; (2) when the activities are relatively unimportant and low-anxiety-producing; (3) when there are no set criteria against which students can evaluate their skills and abilities; (4) when each student is able to monitor the progress of his competitors; (5) when each student can enjoy the compeition, win or lose; (6) when every student has a reasonable chance to win; and (7) when the resources or assistance needed is available.

The conditions under which individualization should be used for instructional purposes are: (1) when there is a specific skill or a specific series of facts to be learned, (2) when programmed materials are available for such learning, and (3) when the teacher has enough time to work with each individual student.

The conditions under which cooperation should be used are: (1) when problem solving is desired, (2) when divergent thinking or creativity is desired, (3) when quality of performance is expected, (4) when learning goals are highly important, (5) when positive interaction among students is desired, (6) when a facilitative learning climate is desired, (7) when a wide range of cognitive and affective outcomes are sought after, (8) when the social development of students is being promoted, (9) when interpersonal skills are being developed, (10) when positive relations between the teacher and the students are desired, and (11) when the reduction of conflict among students is desired. The conditions under which cooperation is effective and desirable are almost too plentiful to mention. Beyond all doubt a cooperative goal structure should be the most frequent way of structuring learning used by teachers.

Undesirable Outcomes of Inappropriate Competition

One of the most pervasive themes of educational criticism is the destructive outcomes of competition. A large number of educators, psychologists, and popular writers have challenged the notion that it must be an inevitable part of American education that a large proportion of students experience failure (Silberman, 1970; Glasser, 1969; Wilhels, 1970; Kagan, 1965; Holt, 1964; Jackson, 1968; Illich, 1971; Postman & Weingartner, 1969; Kohl, 1969; Nesbitt, 1967; Rogers, 1970; Walberg & Thomas, 1971; Rathborne, 1970). Holt states that for the student the most interesting thing in the classroom is the other students,

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but in a competition goal structure the student must ignore them, act as if these others students are really not there. He cannot interact with them, talk with them, smile at them, and often he cannot even look at them. In many schools he can't talk to other students in the halls between classes; in many schools he cannot talk to other students during lunch. Holt states that this is splendid training for a world in which, when you are not studying the other person to figure out how to do him in, you pay no attention to him.

Traditionally an interpersonal competition goal structure in which students are expected to outperform their peers has been used in American education. There is little information, however, on whether students actually perceive their schooling experiences as being competitive or whether they would prefer education to be competitive. In order to obtain some basic information on these questions the authors conducted a series of studies in six different schools in three different Minnesota school districts. Students from five elementary schools and one senior high school were interviewed concerning their perceptions of the competitive or cooperative nature of education and their preferences for cooperative or competitive learning situations (R. T. Johnson, Johnson, & Bryant, 1973; R. T. Johnson, 1974; D. W. Johnson, 1973a). Although slightly different interviews were given each group, all students responded to two identical questions concerning two aspects of cooperation or competition: (1) working by themselves or working with other students to share ideas and materials and (2) each student doing a complete assignment or dividing up the work so that each student contributes something different to a group project. These two questions t

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the interaction, sharing, and substitutability (i.e., interchangeability of actions of members) components of cooperative interaction, or the isolation and nonsubstitutability components of competitive interaction. Responses to the two questions were added together in order to derive a general index of perception of and preference for cooperative learning situations.

In the first study sixth-grade students were selected on the basis of their responses to an internalizing-externalizing scale (R. T. Johnson, Johnson, & Bryant, 1973). In the second study students were randomly selected from the entire pool of sixth grade students in the school district (R. T. Johnson, 1974). In the third study students were randomly selected from the sixth-grades in an open elementary school and a traditional elementary school and from the eleventh-grade in a high school (D. W. Johnson, 1973a). In the first two studies the students were interviewed individually and were shown pairs of pictures (one representing a cooperative situation and one representing a competitive situation), were told a story about what was taking place in each picture, and were asked to choose which (1) was most like their classroom and (2) was the one they would prefer as their classroom. In the third study groups of students were administered a questionnaire which included the stories concerning classroom cooperative and competitive situations and were asked to pick the (1) one most like their classroom and (2) one they would prefer as their classroom. Five different interviewers were involved in the three studies. The diversity in school districts, interviewers, instruments, and interview situations improves the generalizability of the results.

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Table 1

The Percentage of Students Who Perceived Their Instruction As Being Structured Cooperatively

Variable	n=40 1	n=42 2	n=36 3	n=40 4	n=34 5
Sharing	23.0	23.6	22.2	25.0	35.3
Substitutability	18.0	14.3	52.8	65.0	14.7
Total	20.5	18.9	37.5	45.0	25.0

Out of the total 192 students interviewed, 56 or 29% perceived their instruction as being structured cooperatively.

Table 2

The Percentage of Students Who Preferred Cooperatively Structured Instruction

Variable	n=40 1	n=42 2	n=36 3	n=40 4	n=34 5
Sharing	65.0	78.3	50.0	67.5	38.2
Substitutability	68.0	62.0	72.2	72.5	76.5
Total	66.5	70.1	61.1	70.0	57.4

Out of the total 192 students interviewed, 126 or 66% preferred cooperatively structured instruction.

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The results in Table 1 indicate that in the first school 20.5% of the sixth-grade students interviewed perceived their instruction as being cooperatively structured, 18.9% in the second school, 27.5% in the third school, 45.0% in the fourth school, and 35.0% of the eleventh-grade students perceived their instruction as being cooperatively structured. Out of the 192 students interviewed, 29% perceived their instruction as being structured cooperatively. From this data it may be concluded that in the midwestern, suburban school districts sampled the vast majority of students perceived their instruction as being competitively structured.

The results in Table 2 indicate that in the first school 66.5% of the sixth-grade students interviewed preferred cooperatively structured instruction, 70.1% in the second school, 61.1% in the third school, 70.0% in the fourth school, and 57.4% of the eleventh-grade students preferred cooperatively structured instruction. Out of the 129 students interviewed, 66% preferred cooperatively structured instruction. From this data it may be concluded that in the midwestern, suburban school districts sampled, the vast majority of students preferred cooperatively structured instructional activities.

It is interesting to note that one of the schools from which a sample of sixth-grade students were interviewed was architecturally structured as a school without walls and its instructional program was conducted as an "open" school. In such a situation one would expect the majority of students to perceive their instructional activities as being cooperatively structured. The data indicate, however, that while a much higher percentage of students perceived their instruction as cooperatively structured compared to the traditional schools 1 and 2, the percentage was still less than 50% and it was not significantly higher than the

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percentage of students in a traditionally built and conducted school in the same school district. This may indicate that while a school building may be constructed in a new way, and a more cooperative approach to instruction may be talked about, the experience of the students may not be that much different from similar students in other schools within the same school district.

The major conclusions that may be made from the data in Tables 1 and 2 are that while a minority of students perceived their instruction to be structured cooperatively, a majority prefer cooperatively structured instruction. Since there is no data about how instruction was actually structured in the classrooms, one cannot be sure whether the students had actually ever experienced cooperatively structured instructional activities or if their perceptions were accurate. If they had limited or no experience with cooperative structured instruction, or if their perceptions varied significantly from the actual structure set up by the teacher, the preference data might be suspect. In one of the traditional schools (R. T. Johnson, 1974), therefore, a six-week science project was conducted with 34 students in which all science lessons were cooperatively structured. At the end of the six weeks the students were interviewed; 100% of the students perceived the science lessons as being cooperatively structured and 100% preferred cooperatively structured instructional activities. These results support the notion that students who participate in cooperatively structured instructional activities will prefer such a structure to the more traditional competitive structure used in most schools.

The criticism of competition does seem justified in the sense that while students perceive school to be competitive they by and large prefer

cooperative learning situations, especially when they have experienced cooperative interaction when learning. For a more complete discussion of the undesirable outcomes of competition and the myths which support its use see D. W. Johnson and Johnson (1975).

Social Competencies

Currently educational outcomes are popularly separated into cognitive and affective domains. We have reservations as to the utility of such a separation, but in this paper we shall follow it. Intermixed in both the cognitive and affective domains are the basic social competencies a person needs to develop in order to function effectively in relationships with other persons. Cognitive development, acquisition of facilitative attitudes, and behavioral skills are all needed for the development and maintenance of a psychologically healthy person who lives a productive and fulfilling life. D. W. Johnson (1974a) has developed a theory of social effectiveness specifying a series of attitudes, cognitive capacities, and behavioral skills needed for building and maintaining productive relationships with others. We shall not discuss social competencies here, but we do want to emphasize the importance of including social and cognitive development as part of the outcomes sought for by schools.

Cognitive Outcomes

The cognitive outcomes focused upon in the research are achievement and problem solving skills; we have added research on the cognitive development of students. For a full review of the research in this area see D. W. Johnson and Johnson (1974a, 1974b, 1975). Cooperative goal structures are clearly superior to competitive and individualistic goal structures in promoting achievement in problem solving situations and the development of problem solving skills.

Our research in the cognitive domain has focused upon the cognitive development of students. The assumption that there is a basic relationship between cooperation and social perspective taking underlies a great deal of social psychological theorizing. Social perspective taking (or role taking) is the ability to understand how a situation appears to another person and how that person is reacting cognitively and emotionally to the situation; it is the ability to put oneself in the place of others and understand their perspective on the situation. Egocentrism is defined as the inability to take another person's perspective. Cooperation theorists have posited th being able to take the perspective of other individuals is a basic requirement for cooperative interaction (Asch, 1952; Deutsch, 1949, 1962; Heider, 1958; Mead, 1934; Nelson & Kagan, 1972; D. W. Johnson, 1975) and theorists in social and cognitive development posit the same relationship (Piaget, 1948; Flavell, 1968; Kohlberg, 1969). The link between cooperation and social perspective taking is important as there is a general positive relationship between social perspective taking and (1) social adjustment (Dymond, 1950; Dymond, Hughes, & Raabe, 1952; Bell & Hall, 1954; Rose, Frankel & Kerr, 1956; Rotherberg, 1070), (2) the development of the ability to communicate

effectively (Flavell, 1968; Johnson, 1974; Krauss & Glucksberg, 1969), (3) problem solving effectiveness in small groups (Falk, 1974), (4) constructive conflict resolution (Johnson, 1971), and (5) autonomous moral judgment and decision making (Piaget, 1948; Kohlberg, 1969). Social psychologists have theorized that being able to take the perspective of other persons is a basic requirement for (1) the development of self-awareness and personal identity (Kinch, 1963; Mead, 1934), (2) reflective thought to make sense out of one's experiences (Mead, 1934), (3) the ability to predict the effects of one's behavior on others Johnson & Matross, 1975), (4) open-mindedness and the acceptance of differences (Johnson & Johnson, 1974), and (5) altruism and helping (Johnson & Johnson, 1974).

D. W. Johnson (in press), noting that there was no direct data to validate the proposition that cooperation and social perspective taking are related, conducted a study in which middle-class 4th grade students were divided on their disposition to behave in a cooperative or a competitive manner and in which they were examined on ability to take the physical and emotional perspective of other individuals. He found no relationship between ability to take the physical perspective of other individuals and the disposition to cooperate or compete ($r = 0.12$, n.s.), but a strong relationship was found to exist between disposition to cooperate and ability to take the emotional perspective of other individuals ($r = 0.57$, $p < .002$). When compared to 4th graders who were disposed to compete, individuals disposed to cooperate were better able to identify how others are feeling and to explain why they are feeling that way ($t = 4.15$, $p < .001$). The results

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Table 3

Mean Response of High and Low Cooperators on Perspective Taking Tasks; Johnson, in press

	High		Low		
	Mean	SD	Mean	SD	t
Perceptual Perspective	11.08	8.49	9.50	7.03	0.50, n.s.
Recognition of Feeling	2.58	1.50	1.25	1.36	2.28, p .05
Motive for Feeling	4.17	3.24	-1.42	2.37	4.15, p .001
Total for Feeling	6.42	4.37	-0.17	3.15	4.22, p .001

Note: n = 12 in each condition; the higher the score, the more accurate the perspective taking

Table 4

Correlations Among Variables; Johnson, in press

Total Cooperation and Perceptual Perspective	0.12, n.s.
Total Cooperation and Recognition of Feeling	0.34, p .05
Total Cooperation and Motive for Feeling	0.57, p .002
Total Cooperation and Total for Feeling	0.57, p .002
Perceptual Perspective and Total for Feeling	-0.03, n.s.
Recognition of Feeling and Motive for Feeling	0.52, p .005

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Table 5: Mean Response of High and Low Cooperators on Affective Perspective Taking Tasks; Johnson, 1974b

	High		Low		
	Mean	SD	Mean	SD	t
Recognition of Feeling	2.41	1.72	0.41	1.53	4.07, $p < .001$
Motive for Feeling	6.51	3.10	-0.64	2.01	9.17, $p < .001$
Total for Feeling	9.00	4.35	-0.27	2.63	8.55, $p < .001$

Note: n = 22 in each condition; the higher the score, the more accurate the perspective taking

Table 6: Correlations Among Variables; Johnson, 1974b

Total Cooperation & Recognition of Feelings	+0.57, $p < .001$
Total Cooperation & Motive for Feelings	+0.84, $p < .001$
Total Cooperation & Total Affective Perspective Taking	+0.82, $p < .001$

were recently replicated in a different school district with working class 5th grade students (D. W. Johnson, 1974b). Again, compared with competitors, cooperators are more skilled in recognizing feelings in others ($t = 4.07$, $p < .001$), understand the reasons why the person feels the way he does ($t = 9.17$, $p < .001$), and thus are significantly more skilled in taking the affective perspective of others ($t = 8.55$, $p < .001$). The results of these two studies imply that the development of affective perspective taking abilities may be dependent upon the repeated experiencing of cooperative interaction with other persons. Thus the use of cooperative goal structures within learning situations may be crucial for the cognitive development of students necessary for social adjustment, ability to communicate effectively, problem solving effectiveness in small groups, constructive conflict resolution, and autonomous moral judgment and decision making based upon mutual reciprocity and justice.

Affective Outcomes

There have been a number of variables within the affective domain which have been found to be related to the use of cooperative, competitive, and individualistic goal structures. The affective domain includes the feelings, attitudes, and values promoted by instructional activities (D. W. Johnson, 1973b, 1974c). For a full review of the research in this area see D. W. Johnson and Johnson (1974a, 1974b, 1975). The research we have conducted has focussed primarily on the students' attitudes toward school and instruction (R. T. Johnson, 1974; R. T. Johnson, Ryan, & Schroeder, 1974). Students from three 6th grade classes were randomly assigned to one of three science classes: (1) traditional competitive goal

structure and textbook, (2) cooperative problem solving labs and textbook, and (3) cooperative problem solving labs without any textbook. The same teacher taught all three groups. The data indicate that the students who experienced the cooperative problem solving had significantly more positive attitudes toward science than did the competitively structured textbook group ($F = 19.01$, $p < .01$). Further data indicate that the more cooperation the students experience, the more enjoyable they feel the experience is ($p < .02$). These results imply not only that students enjoy working in a cooperative situation (as opposed to a competitive one) but that their attitudes toward a discipline (science) are affected. The dissertation of a graduate student working with us at Minnesota and doing a similar study in social studies with elementary school students replicated these results and found more positive attitudes toward teachers when instruction was cooperatively structured (Wheeler, 1972).

Other studies on cooperation and competition indicate that cooperative goal structures (compared with competitive and individualistic ones) will promote more positive attitudes toward school, subject areas, instructional activities, school personnel, and other students; more reported enjoyment and satisfaction from learning; greater acceptance and appreciation of cultural, ethnic, and individual differences; and more positive self-attitudes.

Table 7: Results from Studies on Attitudes toward Science and Instruction

Group	N	Science Mean	Science S.D.	Instruction Mean
Textbook-Competitive	36	5.38	7.22	2.39
Textbook-Cooperative	33	12.58	6.10	1.58
Materials-Cooperative	35	13.74	4.97	1.04

Science: $F = 19.01$, $p < .01$; Instruction: $p < .02$

Conclusions

The results of the research available from social psychology and education indicate that the most frequently used goal structure for promoting positive learning processes and cognitive and affective outcomes is cooperation. Yet we are convinced that each goal structure may be fruitfully used under certain conditions. Future research in this area should include the establishment of the conditions under which each type of goal structure facilitates the accomplishment of instructional and educational goals.

Most of the research conducted in this area has focused upon standard educational outcomes such as achievement and attitudes toward instruction. Yet perhaps the most important goals of schools are to socialize students into effective persons through promoting constructive cognitive and emotional development. In the future more research in this area needs to focus upon the social and cognitive developmental variables such as perspective taking which directly affect a person's social effectiveness.

Finally, the results of the research overwhelmingly point to the need to train teachers in the procedures for using all three goal structures appropriately. The bridges between knowledge in this area and educational practice need to be explicitly drawn. We have developed a training program for teachers which attempts to do this (D. W. Johnson and Johnson, 1975). Goal structures, in our opinion, are the most important instructional variable under the control of the teacher and the technology for using goal structures to promote education needs to be applied.

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